29. (New) The ceramic heater to be used in semiconductor industry according to claim 1, wherein said heating element is a sintered body produced from metal particles or conductive ceramic particles.

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-29 are presently active in this case. The present Amendment amends Claim 1 and adds new Claims 28 and 29, all without the introduction of any new matter.

In this last regard, Claim 1 has been amended to even more clearly define the invention and is supported at page 16, line 6, of the original specification, for example. New Claims 28 and 29 find support at page 9, lines 3-15 of the original specification, for example.

The outstanding Office Action presents a rejection of Claims 1, 2, 4, 7, 8, 10, 14, 16, 19, 21, and 24 under 35 U.S.C. § 102(b) as being anticipated by Allen (U.S. Patent No. 4,057,707), a rejection of Claims 1-4, 7-11, 14-16,19-21, and 24-27 35 U.S.C. § 103(a) as being unpatentable over Ito et al (U.S. Patent No. 6,072,162, Ito) in view of Allen, a rejection of Claims 5, 6, 12, 13, 17, 18, 22, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Allen in further view of Ishiguro (U.S. Patent No. 5,321,386) or Paquet et al (U.S. Patent No. 5,822,675).

Initially, Applicant respectfully requests that reference "AA" (U.S. 5,665, 260 to Kawada et al) listed on the Form PTO 1449 filed with the Information Disclosure Statement of November 19, 2001, be properly acknowledged as having been fully considered or that an explanation as to the apparent lack of consideration of this reference be provided.

New Claims 28 and 29 are further believed to be patentably distinguishing over the cited prior art because none of the references, individually or in combination, teaches or suggests the features recited in new Claims 28 and 29. Accordingly, new Claims 28 and 29 are believed to be allowable.

In response to the rejections of Claims 1-24 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a), Applicant respectfully requests reconsideration of these rejections and traverses the rejections as discussed next.

Briefly recapitulating, Applicant's invention relates to a ceramic heater to be used in the semiconductor industry, wherein a resistance heating element, which includes one or more circuits, is arranged on a surface of a disc shaped ceramic substrate, and an insulating film is deposited on the resistance heating element. The claimed invention prevents changes in resistance from oxidation of the resistance heating element by oxygen in the air; or from corrosion of the resistance heating element by reactive gas. The claimed insulating film over the resistance heating element also prevents temperature drops caused by the release of heat from the face on which resistance the heating element is formed.

The above advantages are clearly demonstrated by Applicant's tables. In particular, the tables show a change of the resistance value that is 0.1 to 0.3%, i.e., a small change of the resistance value. The tables also show a temperature change with time that is 0.1 to 0.2°C, i.e., a small change indicative of the present invention's good temperature-retaining property.

In the semiconductor industry, it is essential that semiconductor wafers be heated evenly. Therefore, it is necessary to prevent temperature changes on the heating surface. In this regard, the deposited insulating layer on the resistance heating element prevents change to the resistance value thereof, a factor causing temperature change in the heating surface and heat radiation from the back surface.

As discussed above, the present invention provides these advantages and is thus well suited to be used in the semiconductor industry, as presently claimed.

Turning now to the applied prior art, Allen discloses a heater for cooking,[1] and is not a heating device to be used in the semiconductor industry, as required by Applicant's claims. Unlike the ceramic heater to be used in the semiconductor field, the prevention of changes in the resistance value with time and the heat retaining property on the heating face are not required for such cooking devices. Moreover, Allen has no disclosure of the presently claimed ceramic heater including the Claim 1 "disc-form ceramic substrate." The Fig. 1 arrangement suggested by Allen suffers because the temperatures at the corners of the heater portion will drop resulting in uneven heating. Accordingly, Applicant respectfully traverses, and requests reconsideration of, the rejection of Claims 1, 2, 4, 7, 8, 10, 14, 16, 19, 21, and 24 under 35 U.S.C. § 102(b) as being anticipated by Allen.

With respect to the rejection of Claims 1-4, 7-11, 14-16,19-21, and 24-27 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Allen is also respectfully traversed.

In the first place, and as previously noted, Allen is clearly non-analogous art. See MPEP §2141.01(a), quoting In re Oetiker, 977 F2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992): "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." While the question of analogous art is not relevant to an anticipation rejection, it is most relevant to a rejection based on obviousness and must be responded to. See MPEP §707.07(f) and note MPEP 2141.01(a) requiring that the "examiner must determine what is 'analogous prior art' for the purpose of analyzing the obviousness of the subject matter at issue.".

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[1] See the Allen patent, for example, the abstract and claims.

Moreover, even if it were shown that Allen is analogous art, which has not been done, the rejection fails because it fails to explain the reasonable motivation that would have led the artisan to have used a disc-form ceramic substrate. Furthermore, as the heat diffusion plate 11 of Ito must have a gas stream 12 flowing through the center thereof, the reasoning that it would be obvious to add the Allen insulating layer makes no sense as it would interfere with the gas steam Ito requires be present. In this respect, the heater elements 14 are arranged in axial symmetry with respect to central gas stream 12 so as to provide temperature evenness for a wafer, nottemperature evenness for the ceramic substrate. See Fig. 13B showing that the surface temperature of the diffusion plate 11 is higher at the upstream side.

Thus, in Ito, temperature control is based on gas flow and providing an insulating covering would obstruct this temperature control. This is contrary to established law, see In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984) establishing that obviousness can only be determined based upon "a fair reading of the prior art reference as a whole" and that modifications that would make a reference device unsuitable for its intended purpose are clearly not obvious modifications. As further noted in In re Ratti, 123 USPQ 349, 352 (CCPA 1959) a proposed combination cannot involve a substantial reference redesign and a change in the basic principles under which it was constructed and designed to operate.

substrate made of a nitride ceramic, the combination of applied references fails to teach every feature recited in the amended claims.

Accordingly, the rejection of Claims 1-4, 7-11, 14-16,19-21, and 24-27 35 U.S.C. §103(a) as being unpatentable over Ito in view of Allen is clearly without merit.

The rejection of Claims 5, 6, 12, 13, 17, 18, 22, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Allen in further view of Ishiguro or Paquet is also respectfully traversed.

Ishiguro discloses an insulating layer made of a polyimide resin. However, Ishiguro describes a heat-generating resistor element for use in a thermal-type flow rate sensor.[2] The Ishiguro heat-generating resistor element is not used in the semiconductor industry and is different from the heater configured to heat a semiconductor wafer of the present invention. According to Ishiguro, the flow rate of the air is determined by measuring the resistance value variation generated by the change of that fow rate,[3] whereas the heater to be used in the semiconductor field of the present invention is for heating a semiconductor.

Paquet discloses an insulating layer made of a silicone resin. Paquet also discloses a resistance heating element formed on the surface of a substrate through an insulation layer, at least two separate electrically conductive areas being attached to the resistance heating element, and an insulating protective top layer covering the resistance heating elements and the electrically conductive areas. However, the substrate in Paquet consists of metals such as anodized aluminum, aluminum, stainless steel, enameled steel, and copper.[4] Heating such metals generate warp because of the thermal expansion of the metal. Consequently, a clearance would be generated between the semiconductor wafer and the substrate and the distance between a semiconductor wafer and the substrate would become uneven. Therefore, evenly heating a semiconductor wafer cannot be realized with the Paquet heating element.

In effect, the PTO has done no more than present references showing some of the subcombination components have been used in other combination. This approach stands discredited in In re Rouffett, 47 USPQ2d 1453, 1457-58 Fed. Cir. 1998) as follows:

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[2]See the Ishiguro patent, for example the abstract and the claims.

[3]See the Ishiguro patent, for example, at column 2, lines 30-54.

[4]See the Paquet patent, for example Claim 2.

> As this court has stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983); see also *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 USPQ 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).
>
> To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.

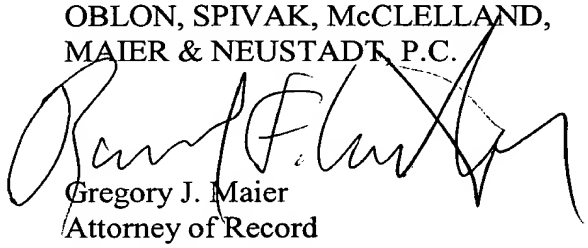
In any event, and as mentioned above, the Allen heater and Ito diffusion plate are different from the claimed present invention, as amended, because they do no teach provision of the claimed disc-form ceramic substrate. Although Ishiguro and Paquet disclose an insulating cover made of a resin, the combination of all of these applied references still fails to teach every feature recited in the claims, and Applicant respectfully traverses, and requests reconsideration of, the rejection of Claims 5, 6, 12, 17, 18, 22 and 23 based on Allen in view of Ishiguro or Paquet.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-27 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, he or she is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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IN THE CLAIMS

Please amend the claims as follows:

--1. (Twice Amended) A ceramic heater to be used in semiconductor industry, comprising:

a disc-form ceramic substrate,

a resistance heating element comprising one circuit or more circuits, said resistance heating element being arranged on a surface of said ceramic substrate, and

an insulating covering deposited on the resistance heating element.--

Claim 28 (New).

Claim 29 (New).